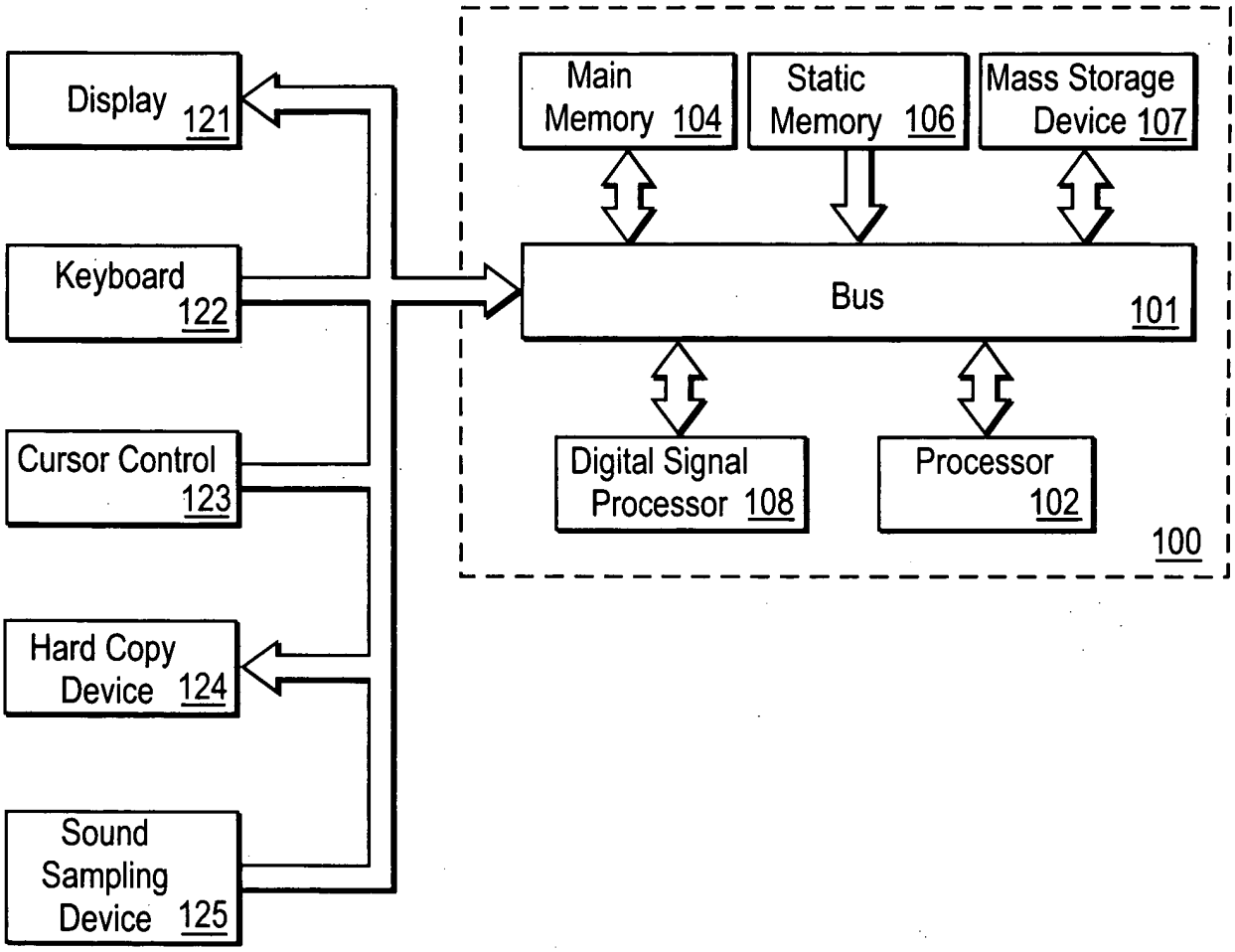
Display 121
Keyboard 122
Cursor Control 123
Hard Copy Device 124
Sound Sampling Device 125
Main Memory 104
Static Memory 106
Mass Storage Device 107
Bus 101
Digital Signal Processor 108
Processor 102
100

FIG. 1

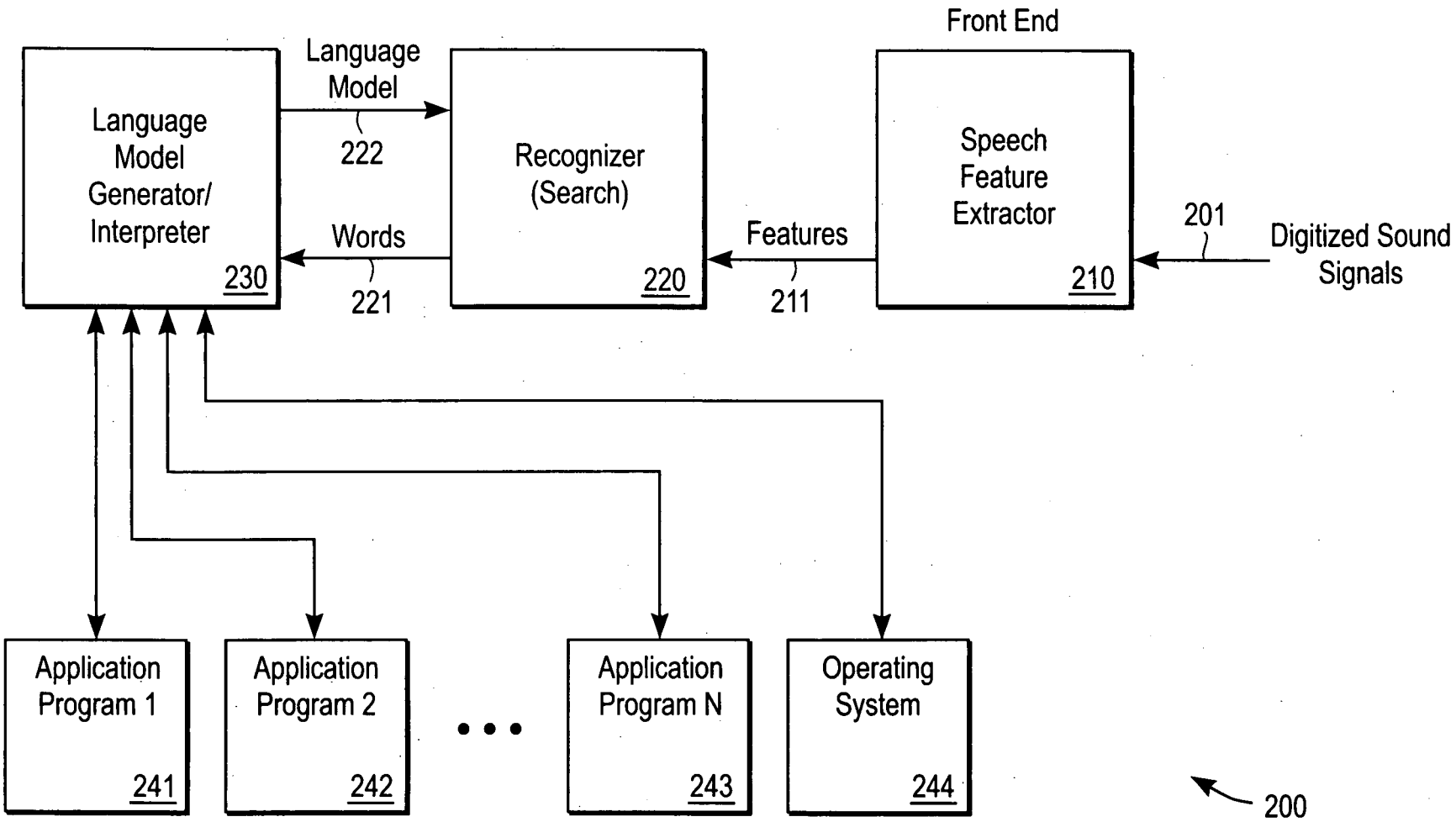
Front End
Language Model Generator/ Interpreter
230
Language Model
222
Words
221
Recognizer (Search)
220
Features
211
Speech Feature Extractor
210
201
Digitized Sound Signals
Application Program 1
241
Application Program 2
242
Application Program N
243
Operating System
244
200

FIG. 2

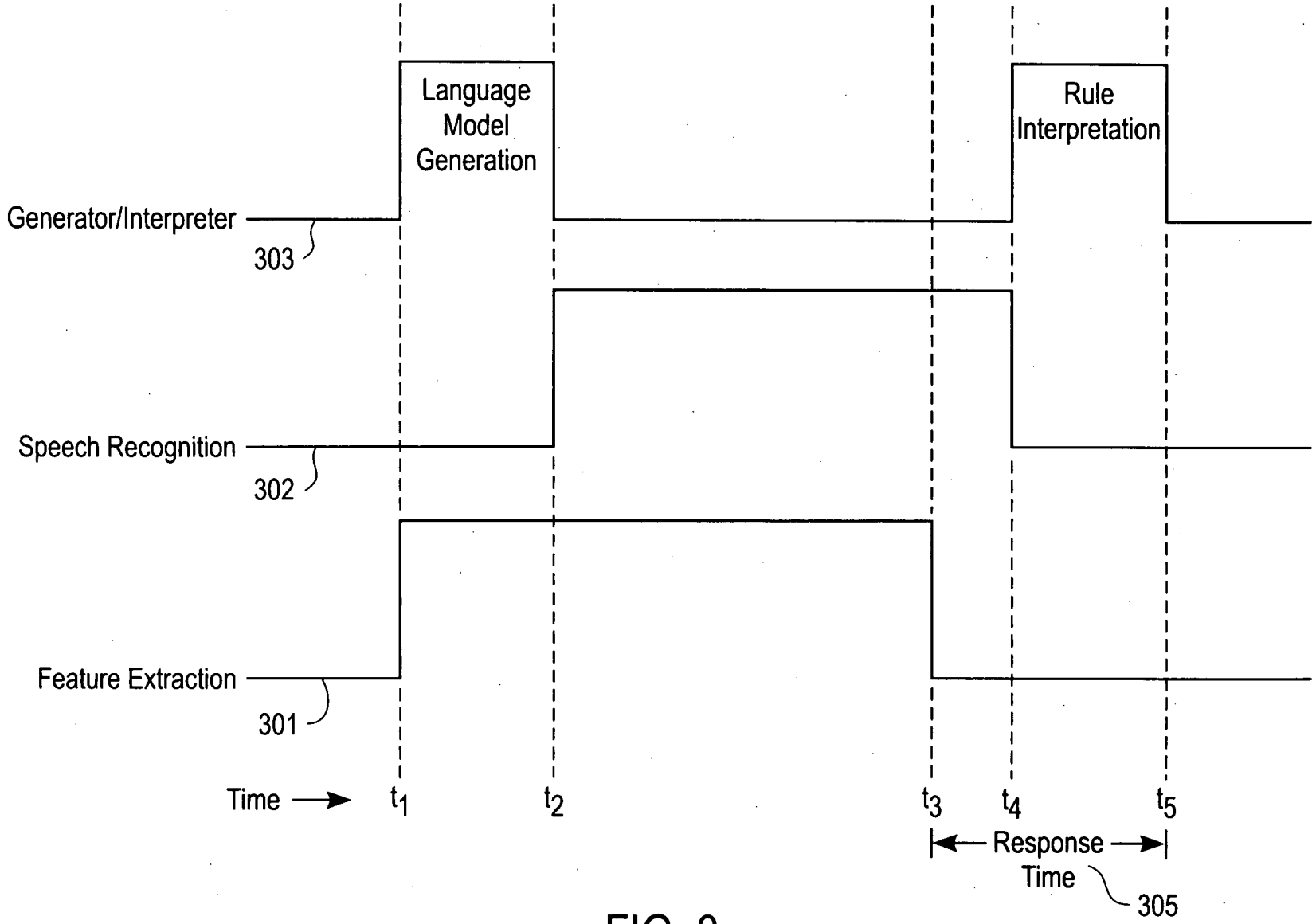
Language Model Generation
Rule Interpretation
Generator/Interpreter
303
Speech Recognition
302
Feature Extraction
301
Time
t_1
t_2
t_3
t_4
t_5
Response Time
305

FIG. 3

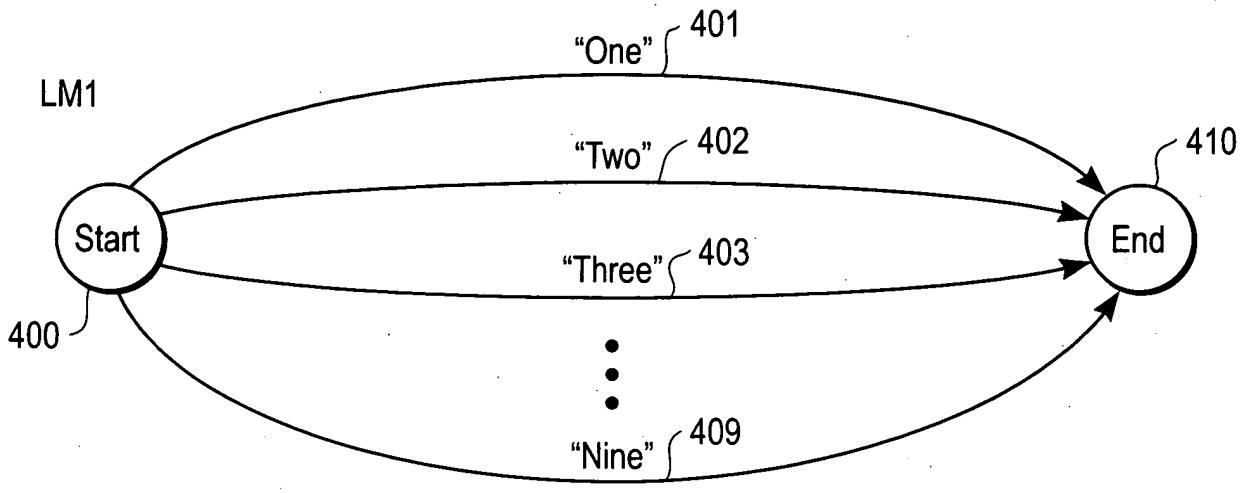
LM1
"One"
401
"Two"
402
"Three"
403
"Nine"
409
Start
400
End
410

FIG. 4

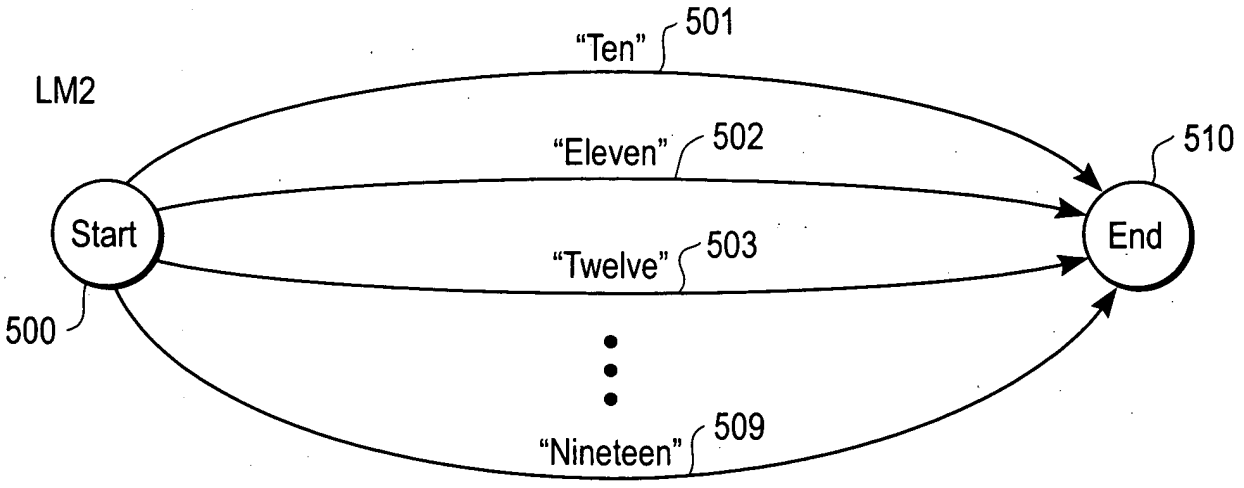
LM2
"Ten"
501
"Eleven"
502
"Twelve"
503
"Nineteen"
509
Start
500
End
510

FIG. 5

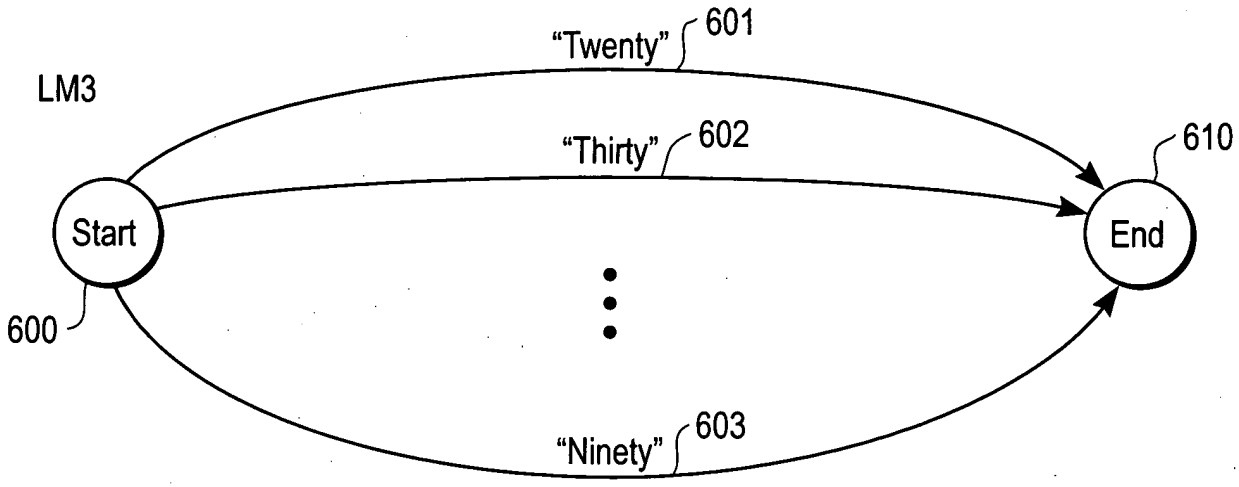
LM3
"Twenty"
601
"Thirty"
602
"Ninety"
603
Start
600
End
610

FIG. 6

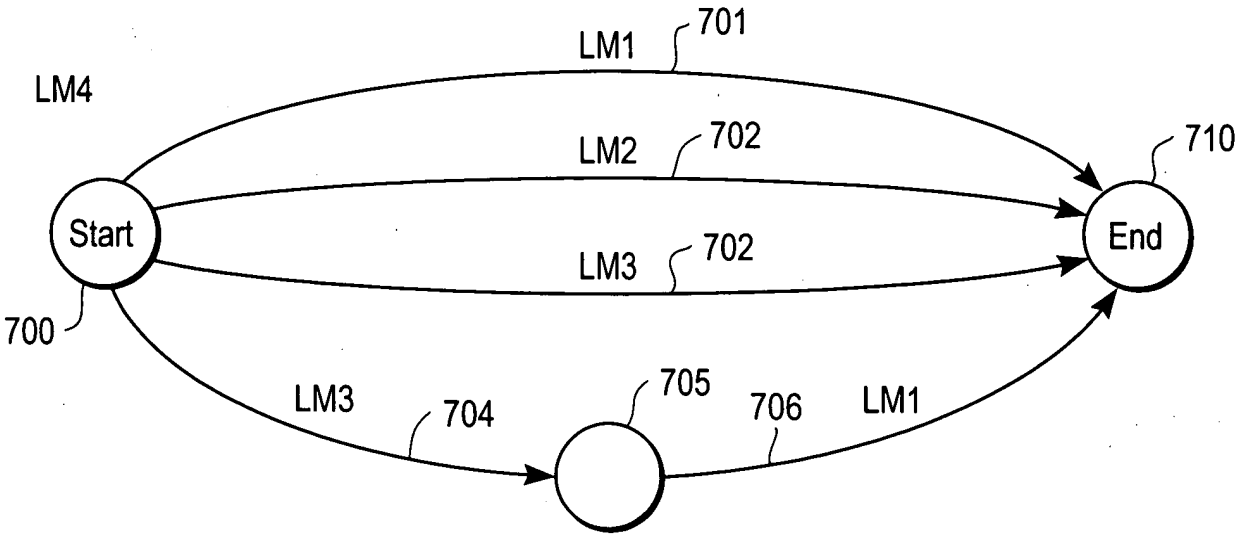
LM4
LM1
701
LM2
702
LM3
702
Start
700
End
710
LM3
704
705
706
LM1

FIG. 7

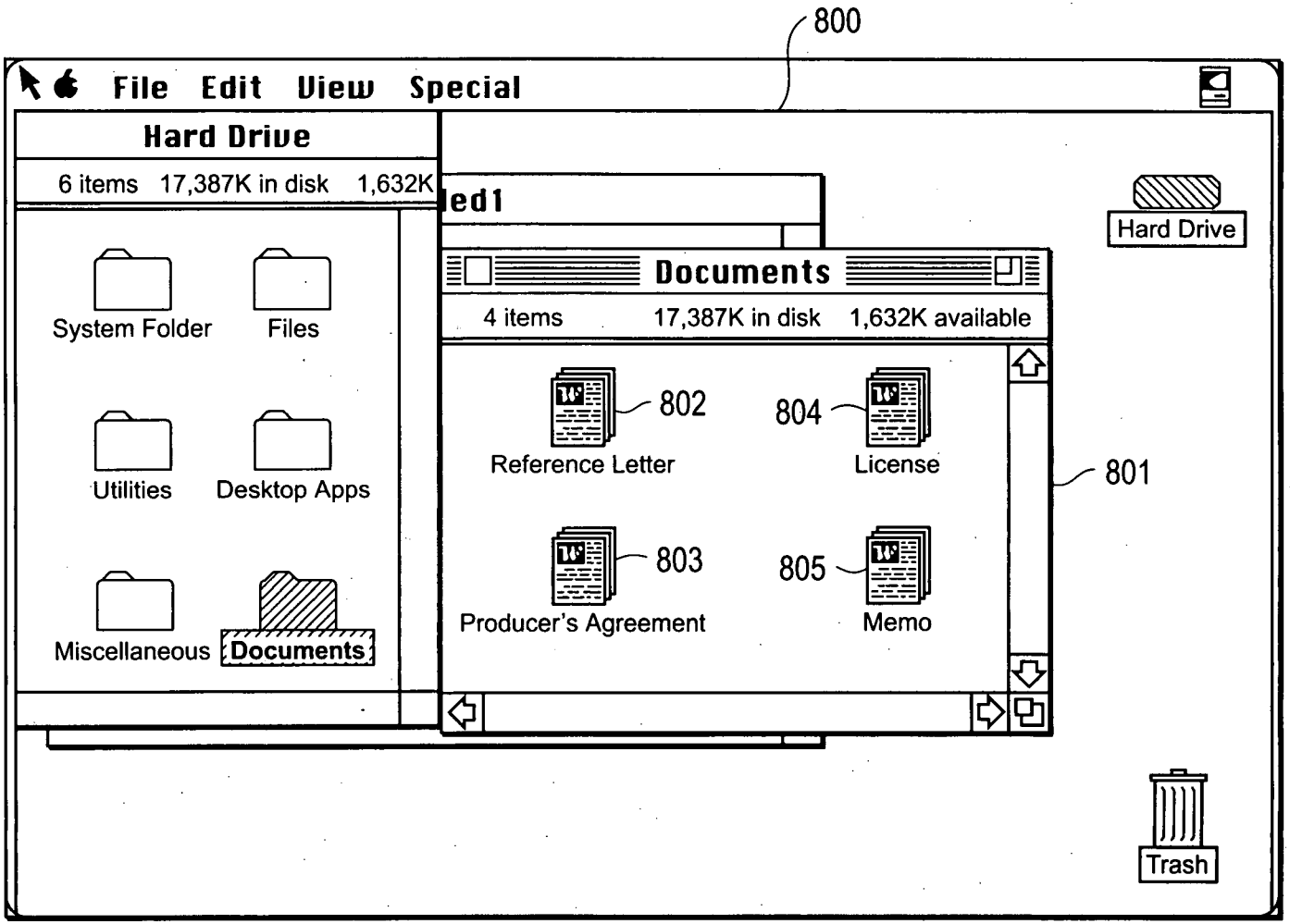
800
File Edit View Special
Hard Drive
6 items 17,387K in disk 1,632K
System Folder
Files
Utilities
Desktop Apps
Miscellaneous
Documents
ed1
Documents
4 items 17,387K in disk 1,632K available
802
Reference Letter
804
License
803
Producer's Agreement
805
Memo
801
Hard Drive
Trash

FIG. 8a

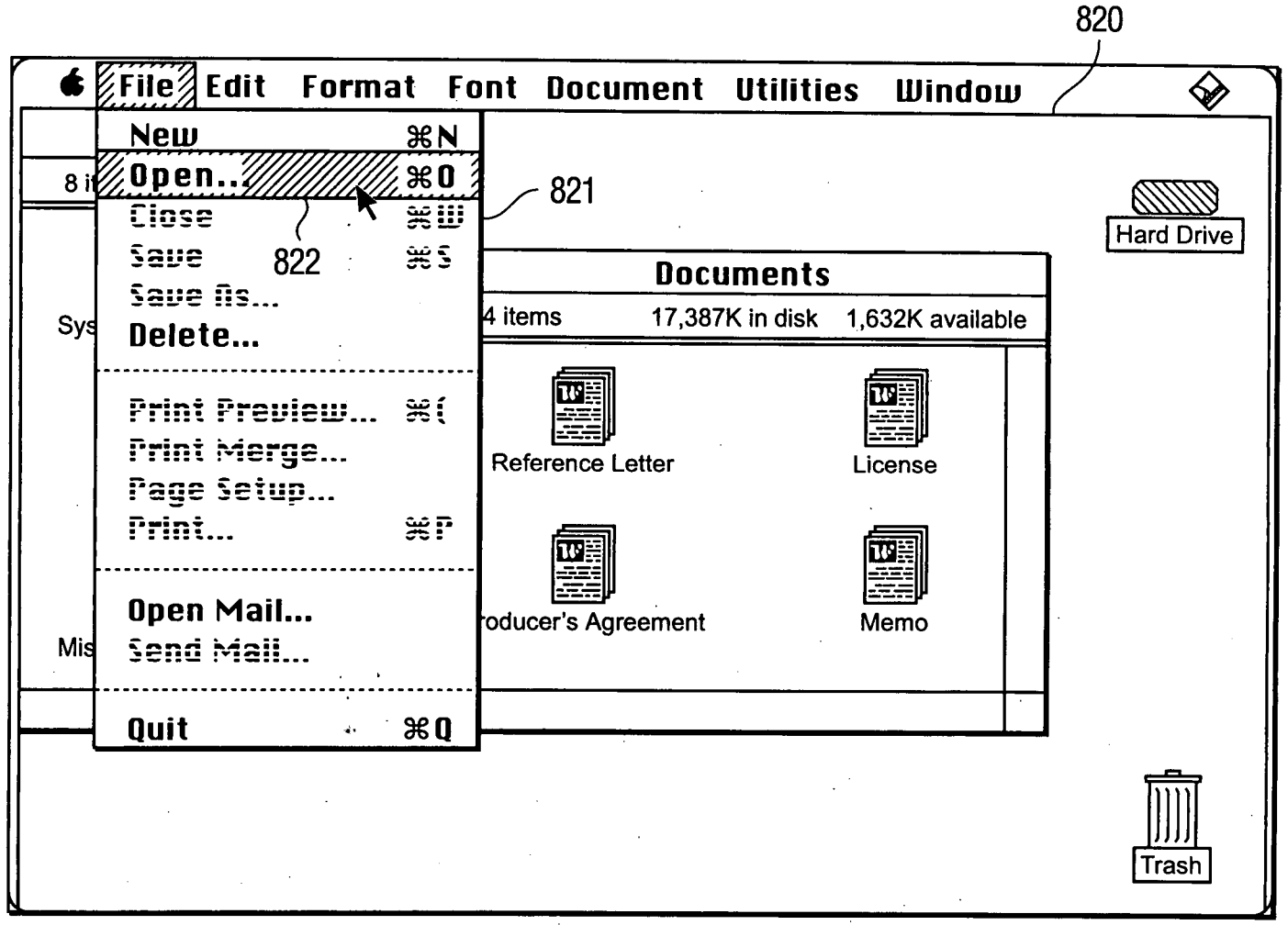
820
File
Edit
Format
Font
Document
Utilities
Window
New ⌘N
Open... ⌘O
Close ⌘W
Save ⌘S
Save As...
Delete...
Print Preview... ⌘(
Print Merge...
Page Setup...
Print... ⌘P
Open Mail...
Send Mail...
Quit ⌘Q
821
822
Hard Drive
Documents
4 items
17,387K in disk
1,632K available
Reference Letter
License
oducer's Agreement
Memo
Trash

FIG. 8b

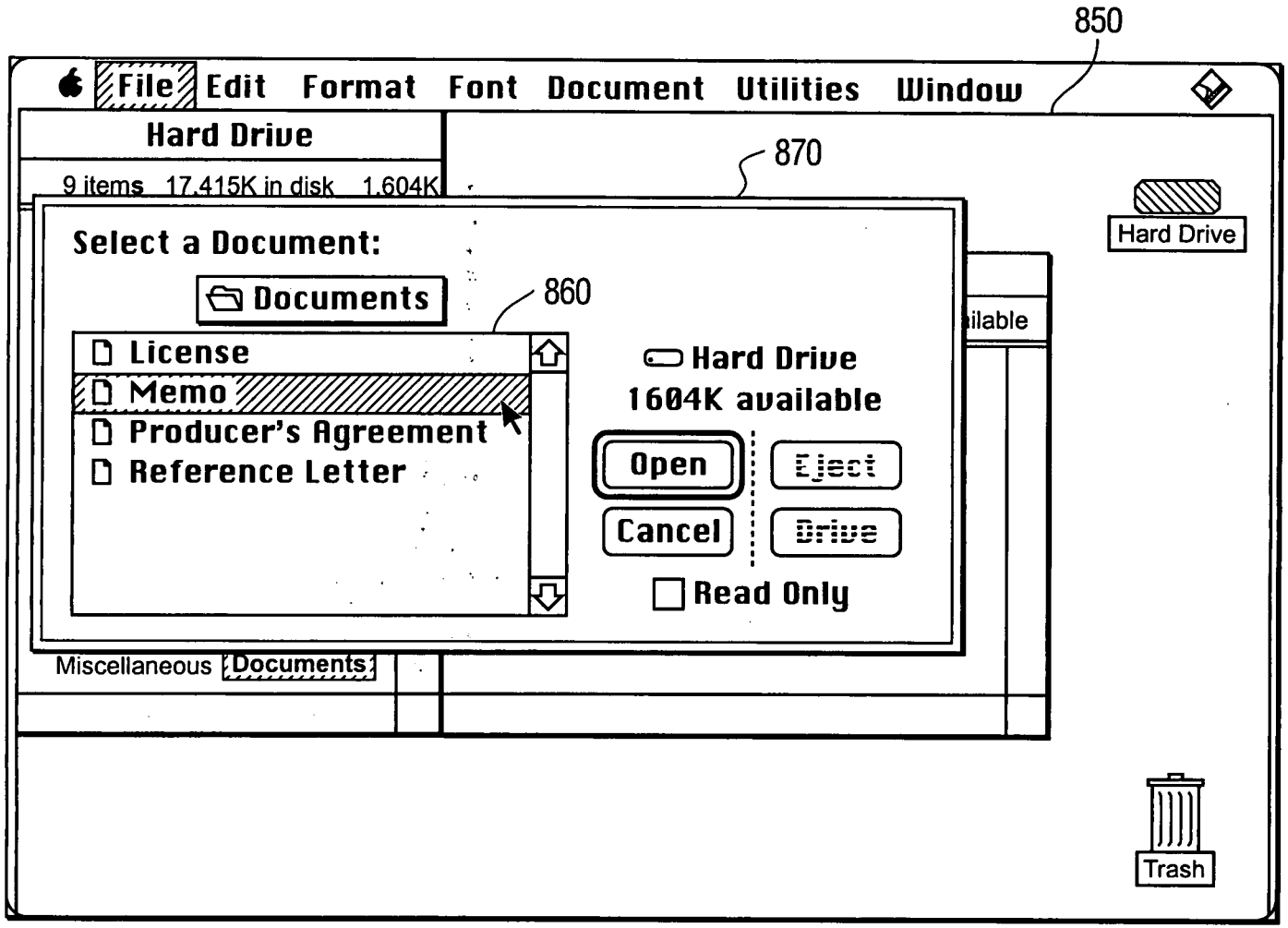
850
File
Edit
Format
Font
Document
Utilities
Window
Hard Drive
9 items 17,415K in disk 1,604K available
870
Select a Document:
Documents
860
License
Memo
Producer's Agreement
Reference Letter
Hard Drive
1604K available
Open
Eject
Cancel
Drive
Read Only
Miscellaneous
Documents
Hard Drive
Trash

FIG. 8c

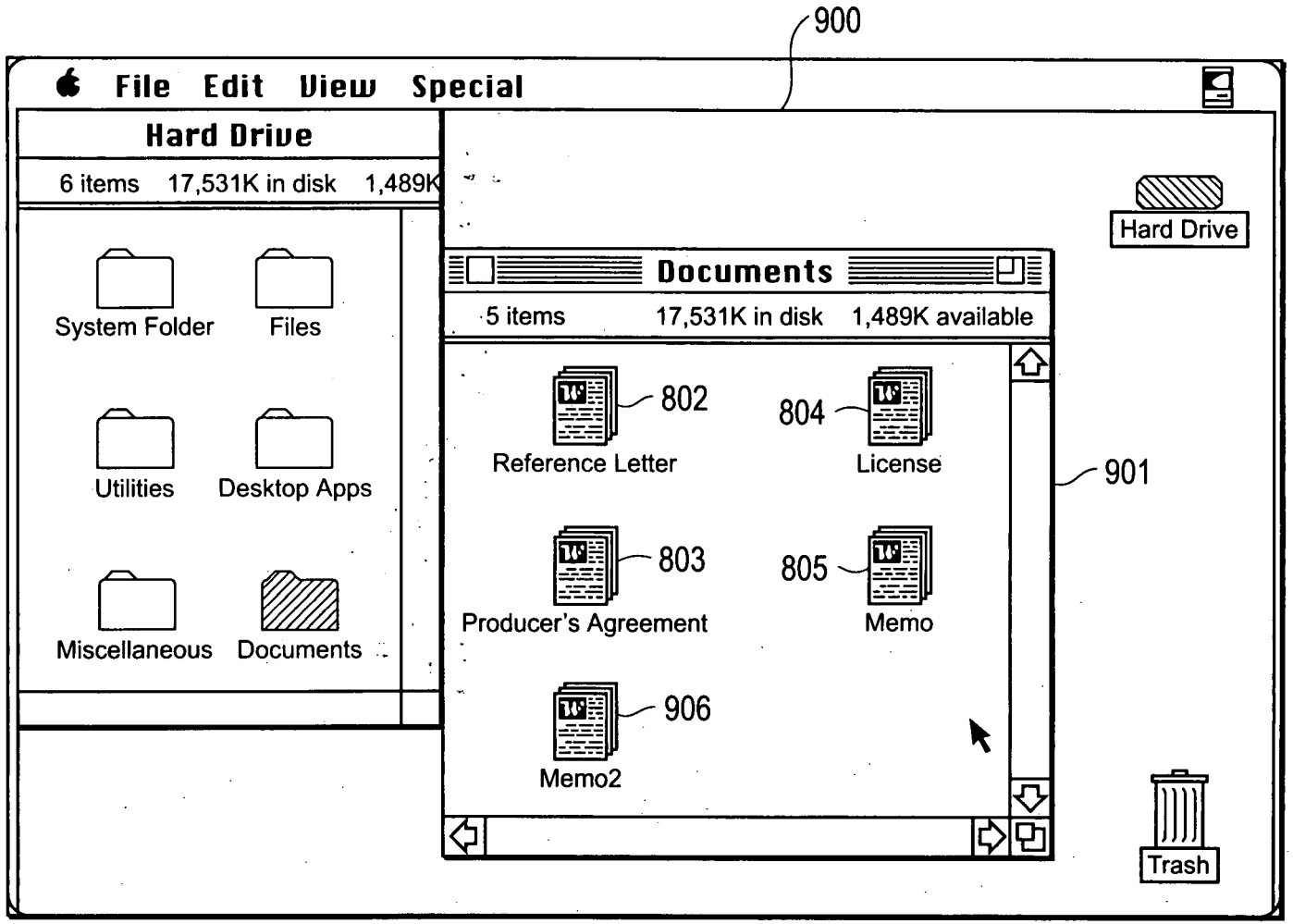
900
File Edit View Special
Hard Drive
6 items 17,531K in disk 1,489K
System Folder
Files
Utilities
Desktop Apps
Miscellaneous
Documents
Hard Drive
Documents
5 items 17,531K in disk 1,489K available
802
Reference Letter
804
License
901
803
Producer's Agreement
805
Memo
906
Memo2
Trash

FIG. 9a

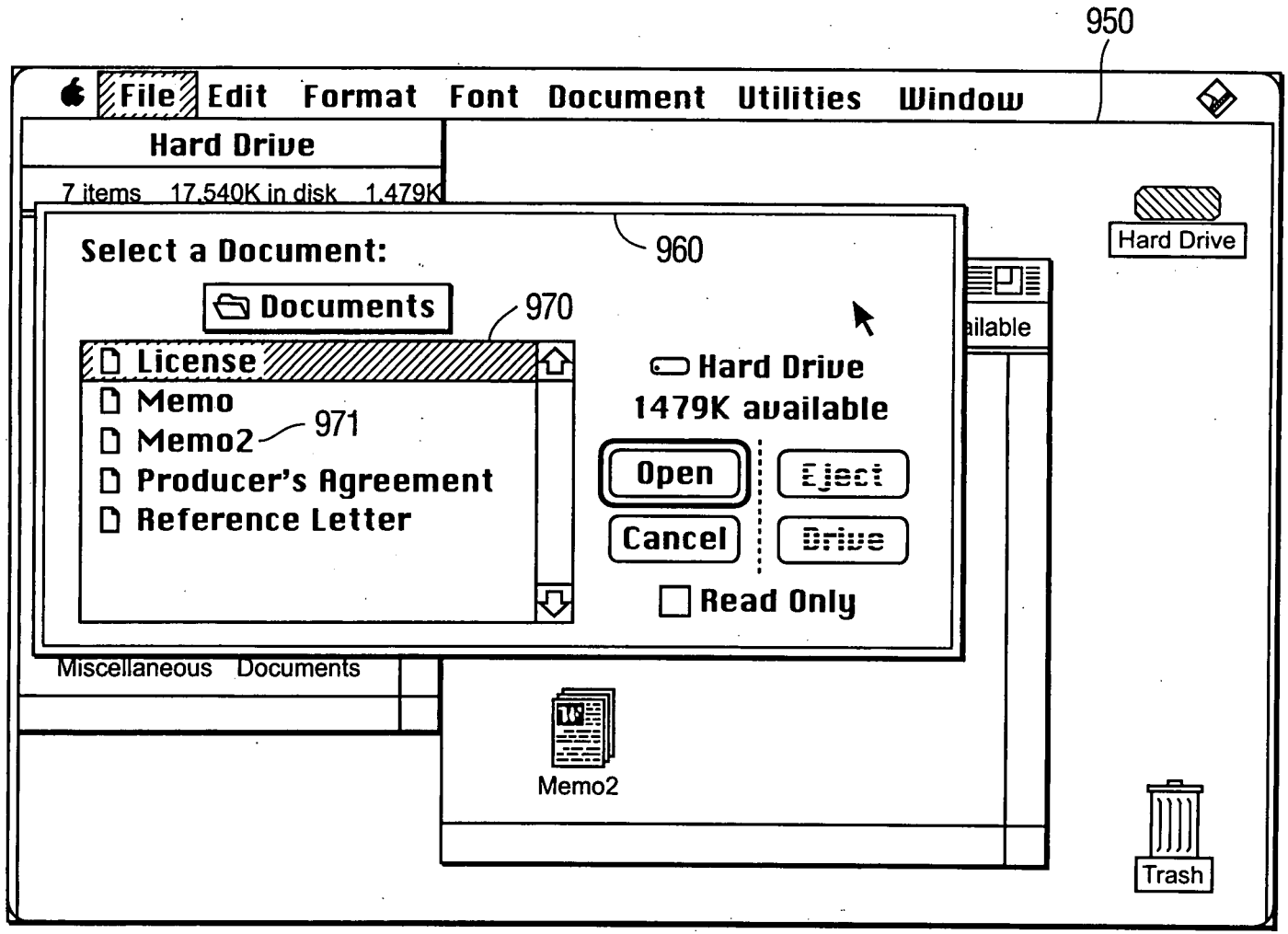
950
File
Edit
Format
Font
Document
Utilities
Window
Hard Drive
7 items 17,540K in disk 1,479K
Select a Document:
960
Documents
970
License
Memo
Memo2
971
Producer's Agreement
Reference Letter
Hard Drive
1479K available
Open
Eject
Cancel
Drive
Read Only
Miscellaneous Documents
Memo2
Hard Drive
Trash

FIG. 9b

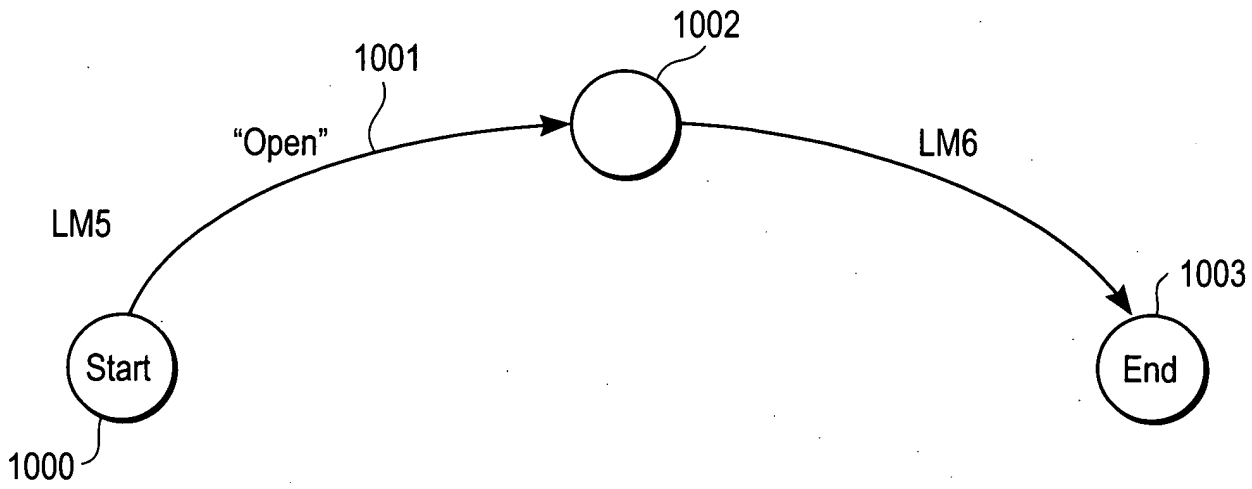

FIG. 10

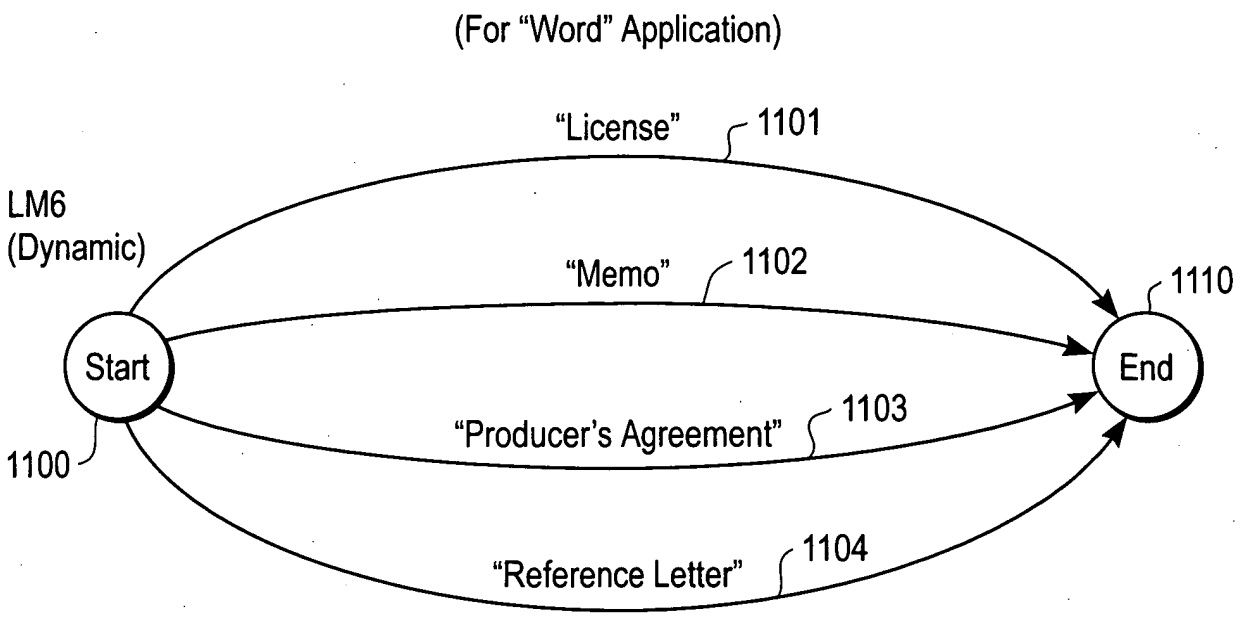
(For "Word" Application)
"License"
1101
LM6
(Dynamic)
"Memo"
1102
1110
Start
End
"Producer's Agreement"
1103
1100
"Reference Letter"
1104

FIG. 11

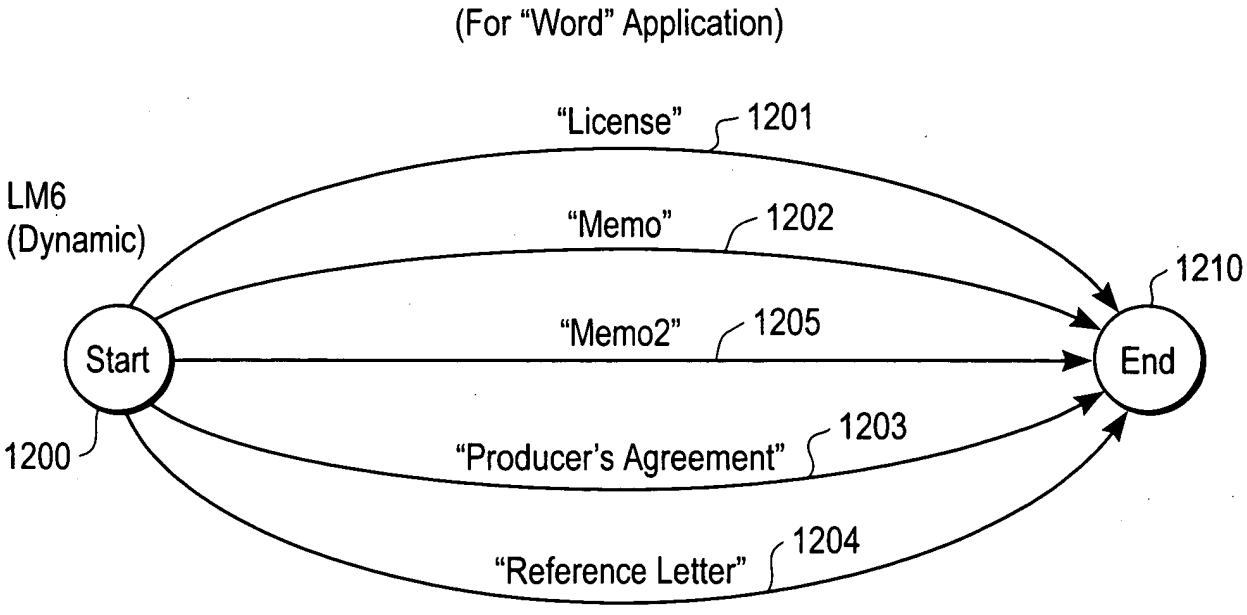
(For "Word" Application)
"License"
1201
LM6
(Dynamic)
"Memo"
1202
1210
"Memo2"
1205
Start
End
1200
"Producer's Agreement"
1203
"Reference Letter"
1204

FIG. 12

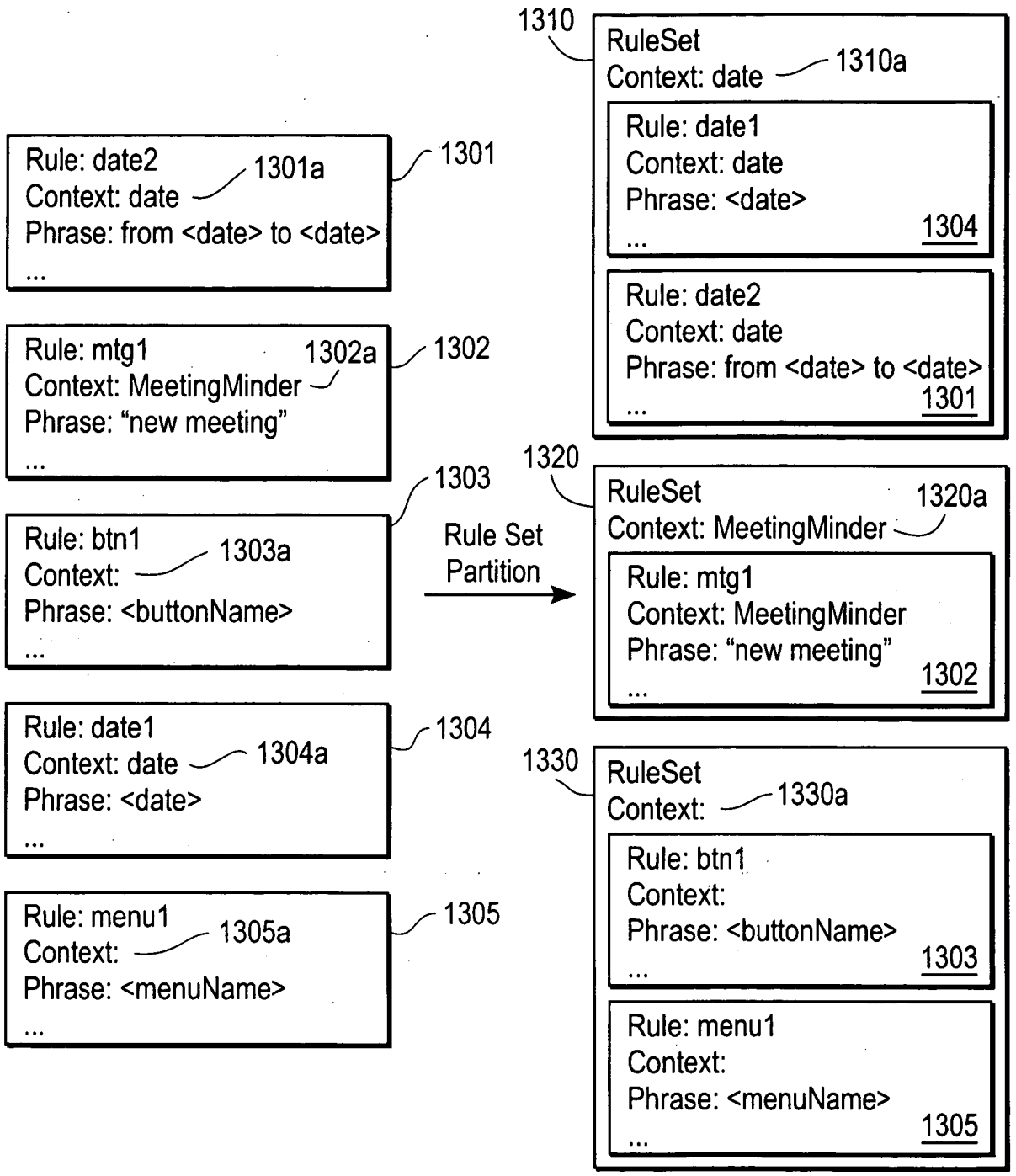
Rule: date2
Context: date
Phrase: from <date> to <date>
...
1301a
1301
Rule: mtg1
Context: MeetingMinder
Phrase: "new meeting"
...
1302a
1302
Rule: btn1
Context:
Phrase: <buttonName>
...
1303a
1303
Rule: date1
Context: date
Phrase: <date>
...
1304a
1304
Rule: menu1
Context:
Phrase: <menuName>
...
1305a
1305
Rule Set
Partition
1310
RuleSet
Context: date
1310a
Rule: date1
Context: date
Phrase: <date>
...
1304
Rule: date2
Context: date
Phrase: from <date> to <date>
...
1301
1320
RuleSet
Context: MeetingMinder
1320a
Rule: mtg1
Context: MeetingMinder
Phrase: "new meeting"
...
1302
1330
RuleSet
Context:
1330a
Rule: btn1
Context:
Phrase: <buttonName>
...
1303
Rule: menu1
Context:
Phrase: <menuName>
...
1305

FIG. 13

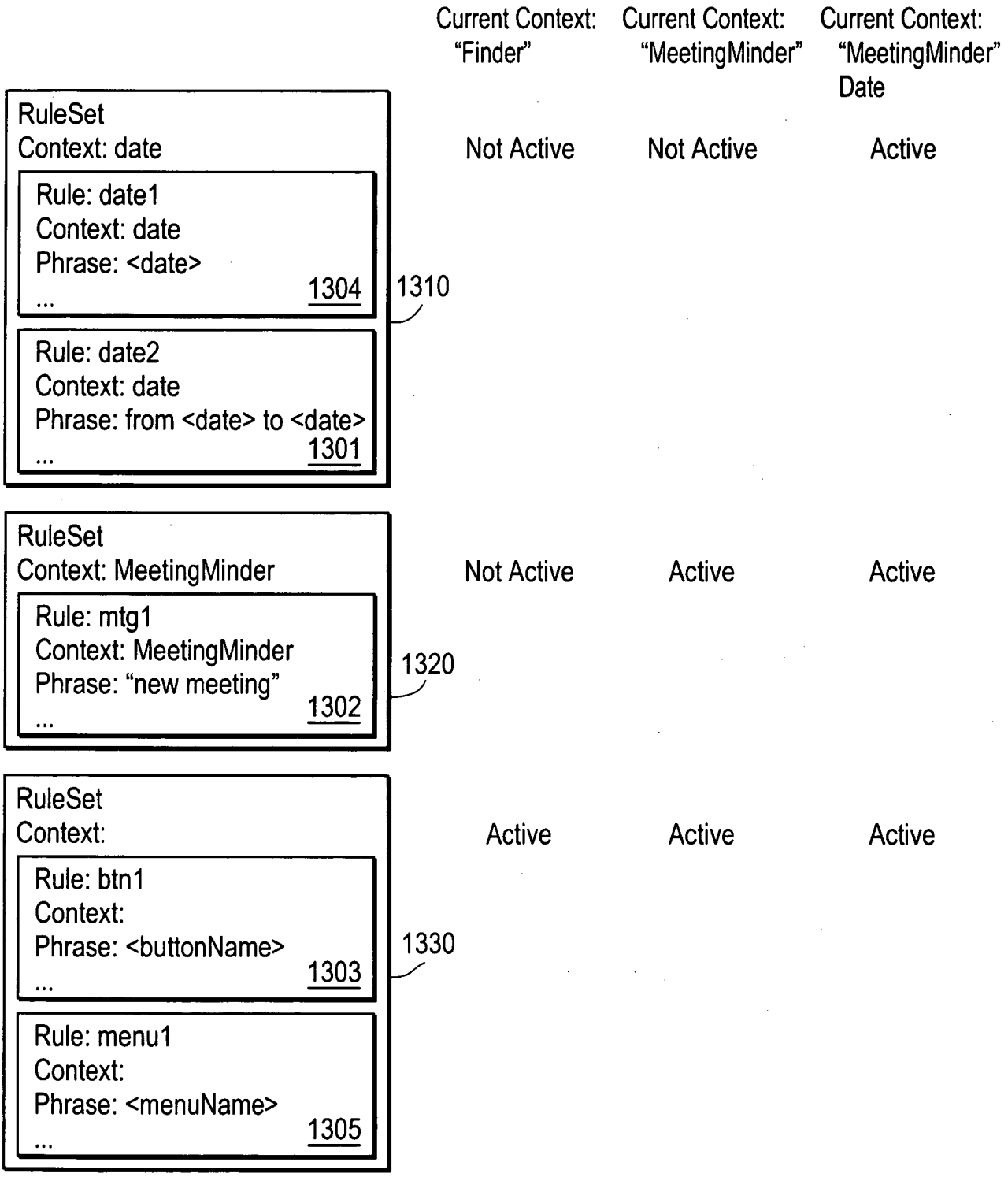
Current Context: "Finder"
Current Context: "MeetingMinder"
Current Context: "MeetingMinder" Date
RuleSet
Context: date
Not Active
Not Active
Active
Rule: date1
Context: date
Phrase: <date>
...
1304
Rule: date2
Context: date
Phrase: from <date> to <date>
...
1301
1310
RuleSet
Context: MeetingMinder
Not Active
Active
Active
Rule: mtg1
Context: MeetingMinder
Phrase: "new meeting"
...
1302
1320
RuleSet
Context:
Active
Active
Active
Rule: btn1
Context:
Phrase: <buttonName>
...
1303
Rule: menu1
Context:
Phrase: <menuName>
...
1305
1330

FIG. 14

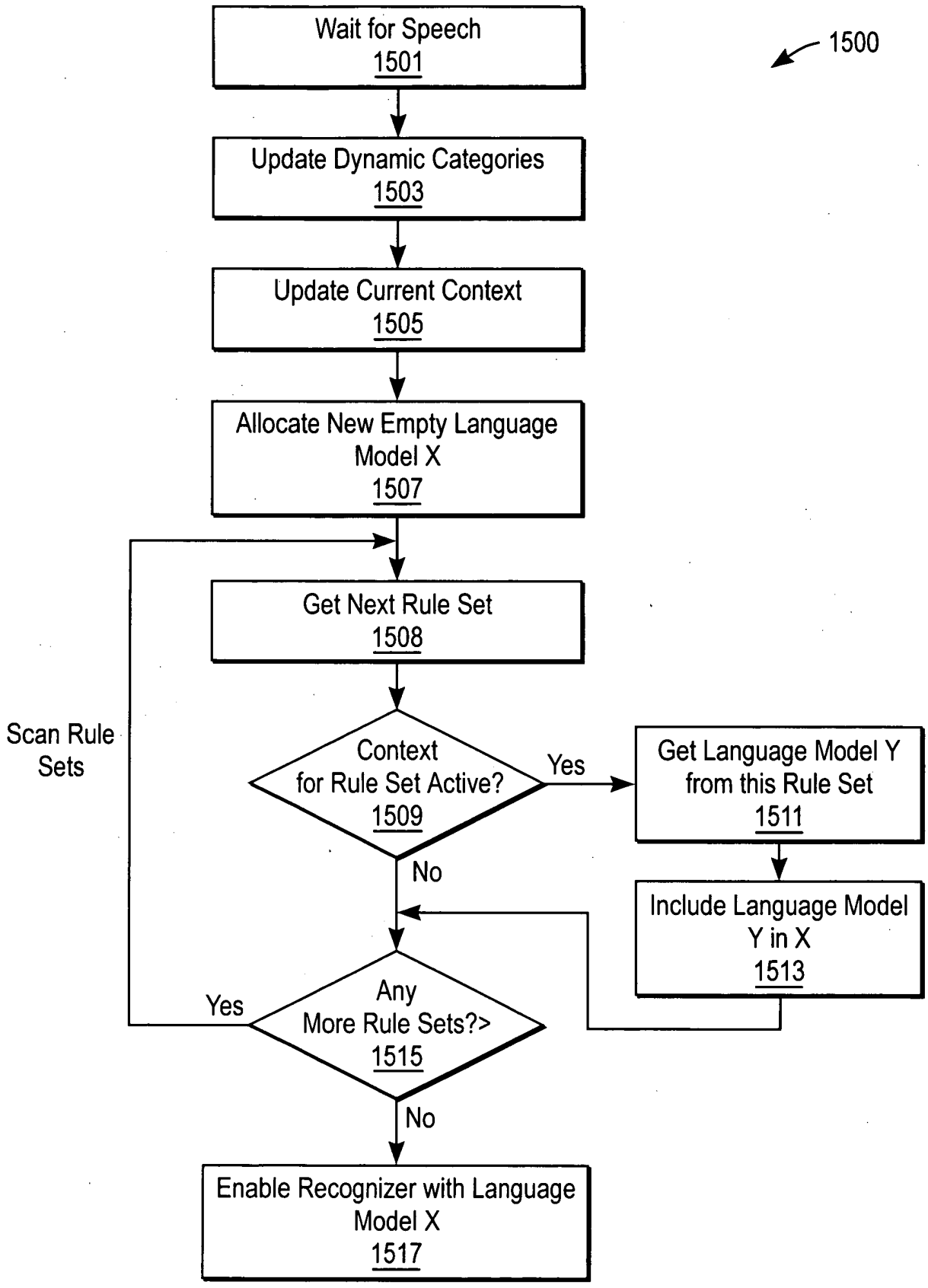
1500
Wait for Speech
1501
Update Dynamic Categories
1503
Update Current Context
1505
Allocate New Empty Language Model X
1507
Get Next Rule Set
1508
Scan Rule Sets
Context for Rule Set Active?
1509
Yes
Get Language Model Y from this Rule Set
1511
No
Include Language Model Y in X
1513
Any More Rule Sets?>
1515
Yes
No
Enable Recognizer with Language Model X
1517

FIG. 15

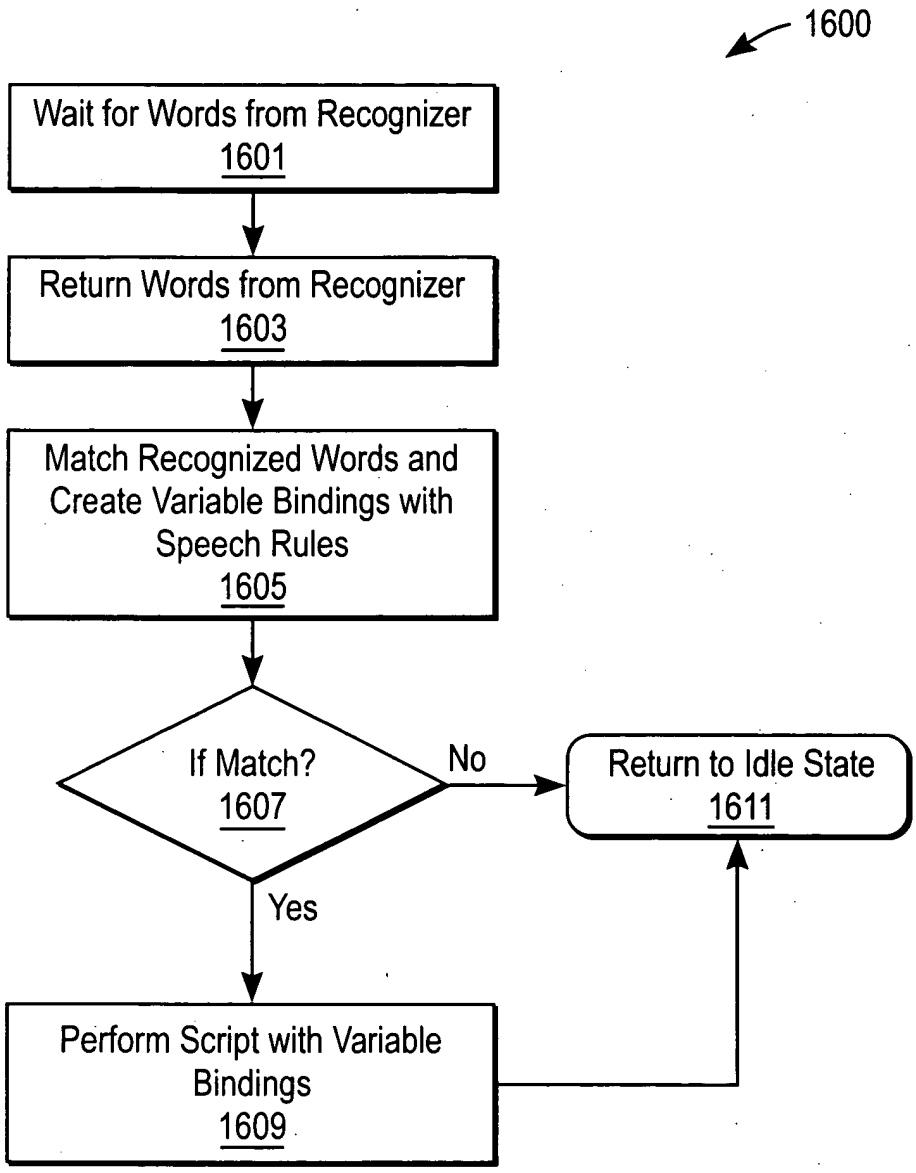
1600
Wait for Words from Recognizer
1601
Return Words from Recognizer
1603
Match Recognized Words and Create Variable Bindings with Speech Rules
1605
If Match?
1607
No
Return to Idle State
1611
Yes
Perform Script with Variable Bindings
1609

FIG. 16